



## SEISMOLOGY

# Aftershocks

A far-reaching history explores the cultural, economic, and political effects of earthquakes

By **Sebastiano D'Amico**

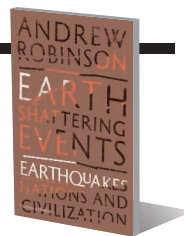
**D**espite advances in monitoring and modern infrastructure, earthquakes continue to represent one of the most serious risks to health, safety, and economic viability in many parts of the world. This is, in part, because science still cannot predict the exact time and place where an earthquake will strike. Yet, despite our insistence on treating such catastrophes as “acts of God,” the truth is that we humans seek out areas prone to major seismic activity. Indeed, more than half of today’s largest cities lie in areas that are prone to earthquakes.

Traditionally, when scientists discuss earthquakes, we talk about geology and seismology, infrastructure and engineering, as well as management strategies for minimizing human and material losses. Nevertheless, the study of an earthquake’s effect on the social and cultural elements of a community can help us understand how different societies have evolved and adapted over time and how cities have built up their relative capacity to withstand future large seismic events.

In fact, as Andrew Robinson describes in his new book, *Earth-Shattering Events*, the effects of an earthquake can reverberate throughout a society’s identity. In some cases, they have played a catalyzing role in

### Earth-Shattering Events Earthquakes, Nations, and Civilization

Andrew Robinson  
Thames and Hudson,  
2016. 256 pp.



the evolution of urban and architectural style and have irrevocably altered the communities in question.

From the first pages, Robinson captures the reader’s attention with a whirlwind summary of some of the more memorable earthquakes in recorded history: the devastation of Lisbon in 1755; the 1960 Chilean earthquake—the strongest in recorded history—which caused a destructive tsunami and unleashed more than 20,000 times the energy of the atomic bomb dropped on Hiroshima; the earthquake in Tangshan, China, that killed 750,000 in 1976.

The chronological organization of *Earth-Shattering Events* allows the reader to easily follow the evolution of our understanding of earthquakes. The book opens with descriptions of several memorable incidents that occurred before the advent of seismology, describing, for example, the panic that beset London when an unprecedented five major earthquakes shook Britain in 1750. The Lisbon earthquake in 1755 destroyed the city, caused extensive damage in the nearby areas, and contributed to the birth of modern seismology.

Earthquakes have fostered changes in political environments as well as served to

A half-century after the largest recorded earthquake struck Chile, a powerful 8.2-magnitude quake hit off the country’s Pacific coast in 2014.

promote industrial and social growth. For instance, Robinson suggests that the Tangshan earthquake, the most lethal earthquake of the 20th century, may have struck the last blow to the flailing Chinese Cultural Revolution. By contrast, he argues that the Gujarat earthquake in 2001 further depressed the economy of an already poor region, thereby reinforcing authoritarianism in India. But in both cases, the respective governments used the earthquake to develop new infrastructures and catalyze industrial growth. Similarly, after the 1906 destruction of San Francisco, the city became an important cultural center with a flourishing high-tech industrial area that lies on the San Andreas Fault—one of the most active systems in North America.

The book concludes with a description of events that recently caught worldwide attention. In 2011, Japan experienced the largest earthquake in its history. Initially estimated at a magnitude of 7.9, the earthquake’s true magnitude—9.0—wasn’t announced until nearly 24 hours after it occurred. Upgraded warnings about the resulting tsunami heights failed to reach many coastal communities in time, and nearly 19,000 people perished. It was the subsequent failure of the Fukushima nuclear power plant, however, that garnered the most attention, with several media outlets broadcasting uninterrupted coverage of the disaster.

Robinson clearly articulates the difference between earthquake hazard and risk. The first depends on the magnitude and location of likely earthquakes, as well as how often they occur, whereas the second quantifies the potential damage an earthquake could inflict on buildings or urban centers. The latter is strongly linked to the concept of vulnerability and the importance of seismic retrofitting. Robinson places particular emphasis on the fact that the damage caused by past earthquakes is very often neglected when new structures are planned, resulting in modern cities with lax building codes and few or no contingency plans, especially in areas that are perceived as low-seismicity regions. Quoting the engineering seismologist Nicholas Ambraseys, Robinson writes, “Earthquakes don’t kill people; buildings do.”

In conclusion, this book places earthquakes into proper historical perspective. It will make for an enlightening read, both for scholars and experts in seismology and geosciences and for readers with an interest in history.

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The reviewer is at the Department of Geosciences,  
University of Malta, Tal-Qroqq, Msida, Malta.  
Email: [sebastiano.damico@um.edu.mt](mailto:sebastiano.damico@um.edu.mt)



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Sebastiano D'Amico (July 7, 2016)

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Editor's Summary

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